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RECORD OF DECISION AMENDMENT

FOR

BECKMAN INSTRUMENTS SUPERFUND SITE

PORTERVILLE, CALIFORNIA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 9
SAN FRANCISCO, CALIFORNIA

SEPTEMBER 2005

BECKMAN INSTRUMENTS ROD AMENDMENT

Beckman Instruments, Inc. Superfund Site
Porterville, Tulare County, California
EPA ID No. CAD048645444

INTRODUCTION TO THE SITE AND STATEMENT OF PURPOSE

The United States Environmental Protection Agency (EPA) is amending the groundwater remedy that was selected in the 1989 Record of Decision (ROD) for the Beckman Instruments Superfund Site (Site) located in Porterville, California.

The 1989 ROD selected extraction and treatment as the remedy for the contaminated groundwater at the Site. The original groundwater remedy has been successful in cleaning up most of the volatile organic compound (VOC) contamination at the Site; however, small, localized areas remain above the cleanup goal for 1,1-dichloroethylene (1,1-DCE). This decision document, or ROD Amendment, presents Monitored Natural Attenuation (MNA) as EPA's selected remedy for addressing the remaining groundwater contamination at the Site.

EPA is the lead agency for response actions at this Site, and the California Department of Toxic Substances Control (DTSC) is the support agency.

This response action has been chosen in accordance with §117 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, 42 U.S.C §9617, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR §300.435(c)(2)(ii).

The original ROD was signed on September 26, 1989 and an Explanation of Significant Differences (ESD) was signed on March 6, 1991.

This ROD Amendment will become part of the Administrative Record, pursuant to NCP §300.825(a)(2). The Administrative Record is available for review at the following locations:

City of Porterville Library
41 West Thurman Avenue
Porterville, CA 93257
(559) 784-9458
Hours: Mon. – Thurs. 10am – 8pm

Superfund Records Center
95 Hawthorne Street
San Francisco, CA 94105
(415) 536-2000
Hours: Mon. – Fri. 8:30am – 4pm

SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

The Site, which includes the Beckman plant and surrounding study area, is located near the southern limit of the City of Porterville, California. Porterville is located in Tulare County about 25 miles southeast of Visalia on the eastern fringe of California's Central Valley. The Beckman plant is located at 167 West Poplar Avenue and occupies approximately 12 acres of a 94.33 acre parcel of land. The plant facilities consist of seven buildings used to manufacture electronic equipment, to house chemicals and supplies, to house the wastewater treatment plant, and to house maintenance equipment. The facility also contains a tank farm, drum storage area, and former waste handling areas.

The Site study area is generally bounded by the Tule River to the north, the Beckman plant property line to the east, Poplar ditch to the south and Newcomb Drive to the west (Figure 1). Land use within the study area includes residential, field crop, orchard, grazing land, Tule River floodway, commercial, industrial, and vacant land.

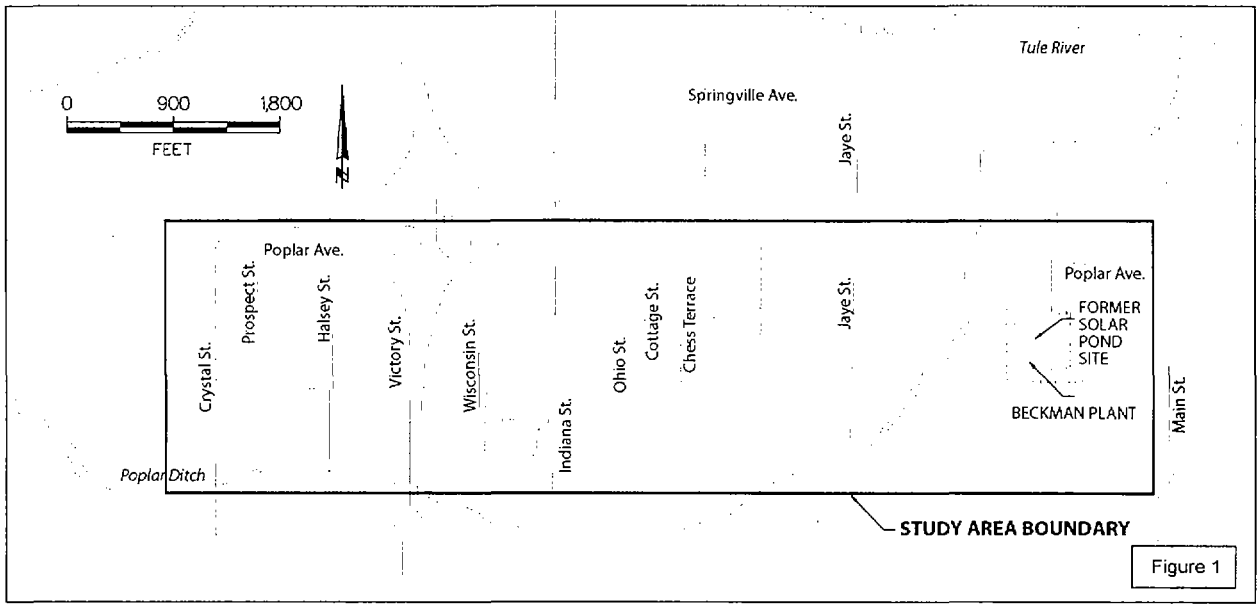

Figure 1: Beckman Instruments Superfund Site Study Area

At this Porterville facility Beckman[1] has manufactured electronic instrument assemblies, subassemblies, and printed circuit boards since 1967. Industrial processes used at the plant have included electroplating and degreasing. Waste streams from these processes have included spent solvents, acid solutions, salts, metal-laden solutions, and plating bath sludge. Between 1967 and 1974, these waste streams were discharged to the City of Porterville sewer system. From 1974 until early 1983, waste streams were discharged to an on-site solar evaporation pond. Beginning in 1983, waste streams have been treated using wastewater facilities located on-site, thus eliminating any further discharge to the solar pond.

[1] Now Beckman Coulter, Inc.

Beckman initiated groundwater-monitoring activities in late 1982 and early 1983, in conjunction with closure of the solar pond. Plant chemicals were discovered in the groundwater below the solar pond in 1983. Groundwater in the vicinity of the site area was pumped for both domestic and agricultural purposes. A survey completed in summer 1983 revealed the presence of VOC contamination in residential wells located west of the plant. After discovery of the groundwater contamination, Beckman provided alternative water supplies to approximately 300 residences located near the plant. As an additional groundwater protection measure, eight private wells which were screened in both the upper and lower aquifers were sealed or replaced to further limit the spread of contamination.

On December 2, 1983, the County of Tulare Health and Human Services Agency (HHSA), Environmental Health Services Section issued a memorandum to all District Sanitarians that imposed a moratorium on well drilling in areas downgradient of the Site. This institutional control prohibited the approval of building permits for property owners proposing to obtain water from wells in the Site area. The moratorium remains in effect.

Drilling and testing data collected during subsequent pre-Remedial Investigation (RI), RI investigations and Remedial Design/Remedial Action (RD/RA) investigations indicated the existence of a multi-layer aquifer system consisting of an upper aquifer, an upper aquitard and a lower aquifer beneath and downgradient of the plant (Figure 2).

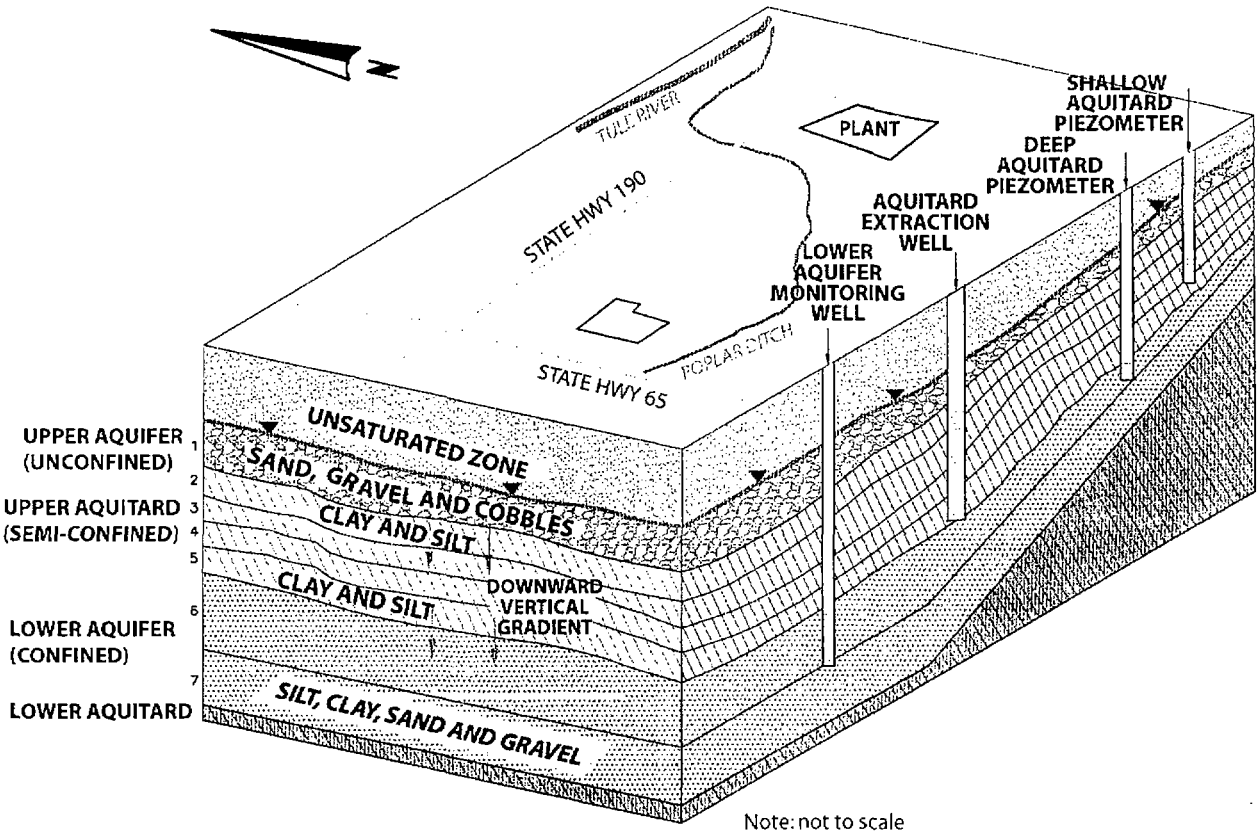

Figure 2: Hydrogeologic layers at the Beckman Instruments Superfund Site

The upper aquifer is comprised of silt, sand, gravel, and cobbles. It merges with sediments of the upper aquitard at depths of approximately 50 to 75 feet below ground surface (bgs) across the Site. Groundwater occurs in the upper aquifer under unconfined conditions at historical depths ranging from approximately 7 to 42 feet bgs. Groundwater flow in this aquifer is to the west and northwest across the Site. The upper aquifer receives recharge from the Tule River, Poplar Ditch, a recharge pond, and precipitation.

The upper aquitard is comprised of a fine-grained sequence of silt, clayey silt, and sandy clay. It is a low-permeable confining unit between the upper aquifer and the lower aquifer that retards vertical movement of groundwater between the upper and lower aquifers. The top of the upper aquitard lies approximately 50 feet bgs in the vicinity of the Beckman plant. The unit ranges in thickness from approximately 20 to 60 feet. Groundwater occurs in the upper aquitard under semiconfined conditions with water levels in upper aquitard peizometers ranging from approximately 18 to 23 feet bgs. Groundwater flow within the aquitard is primarily vertical.

The lower aquifer is comprised of silty to clayey sand and gravel with interbedded silt and clay. This unit occurs below the upper aquitard with the top of the lower aquifer ranging in depth from approximately 70 to 130 feet bgs. Groundwater occurs in the lower aquifer under confined conditions with water levels in lower aquifer piezometers ranging from approximately 27 to 33 feet bgs. Groundwater flow in the lower aquifer is south-southwest near the Beckman plant and west-southwest in the remainder of the Site. The lower aquifer receives recharge from the upper aquifer in the form of vertical leakage through the upper aquitard.

The VOC contamination was originally found predominantly in the upper aquifer. Later, the VOC contamination was also found in the upper aquitard and the lower aquifer. The organic compounds identified as compounds of concern (COCs) at the Beckman site were 1,1,1-trichloroethane (1,1,1-TCA), 1,1-DCE, Freon 113, trichloroethylene (TCE), and 1,1-dichloroethane (1,1-DCA).

After the discovery of groundwater contamination in 1983, Beckman was directed by the California Department of Health Services (DHS)[2] and the California Regional Water Quality Control Board (RWQCB) to determine the extent of the groundwater contamination. In March 1985, DHS placed the site on California's Superfund Priority Ranking List. At the request of DHS, EPA assumed the lead role in overseeing remedial studies and cleanup activities at the Site in October 1985. EPA added the site to the Federal Superfund National Priorities List as noticed in the Federal Register on June 10, 1986.[3]

By June of 1985 Beckman had determined that COCs had migrated westward 9,000 feet downgradient of the site. After constructing numerous monitoring wells and piezometers to define the extent of the contaminant plume, Beckman constructed 20 wells in the lower aquifer and 15 containment/reclamation wells in the upper aquifer to extract groundwater for treatment. In July 1985 Beckman began cleanup activities via pumping from the upper aquifer to allow removal of COCs by air stripping to contain the western migration of the groundwater plume.

[2] The Toxic Substances Control Division of the California Department of Health Services (DHS) is the predecessor to the California Department of Toxic Substances Control (DTSC).
[3] EPA proposed the Site for the NPL on October 15, 1984.

On February 20, 1987, Beckman entered into an Administrative Consent Order with EPA, Docket No. 87-02, to conduct the Remedial Investigation/Feasibility Study (RI/FS) at the Site.

A second containment and reclamation system began operations in the eastern portion of the site area in July 1987 to control the groundwater level gradients in the area of generally higher COC concentrations, and to remediate upper aquifer groundwater. The treated groundwater from the air stripping facilities was used for agricultural irrigation or was discharged to infiltration basins located near the Tule River. The water quality of the treated groundwater was regulated pursuant to RWQCB and National Pollutant Discharge Elimination System (NPDES) permit requirements. Air releases from the air stripping facilities were permitted by the Tulare County Air Pollution Control District (TCAPCD). In addition, Beckman prepared a risk assessment for the air quality impacts due to air releases which was reviewed by TCAPCD and EPA to determine that the contaminant levels released to the atmosphere were below the levels specified in EPA national policy.

EPA issued the ROD for the Site on September 26, 1989. For remedial purposes, the Site was separated into three areas: 1) Upper Aquifer, 2) Upper Aquitard and Lower Aquifer, and 3) Lead-contaminated Soils. The following remedies were selected for each area:

- Upper Aquifer: Continuation of the existing upper aquifer extraction, treatment, and discharge systems.
- Upper Aquifer/Lower Aquifer: Concurrent upper aquitard and lower aquifer extraction, treatment, and discharge. Installation of extraction wells and treatment of extracted water using existing air stripping facilities
- Soils: Excavation of lead-contaminated soils and offsite disposal of the excavated soils.

The cleanup goal for the groundwater was the more stringent of the State or Federal Maximum Contaminant Level (MCL) for each contaminant, and the cleanup goal for the soil was removal of all soil with lead levels above 200 ppm.

EPA issued an ESD on March 6, 1991 that amended two sentences in the ROD to clarify the following:

1. The ROD's numerical cleanup goals constitute "cleanup standards" to be attained at the completion of the remedial action.
2. EPA would review the remedial action selected in the ROD pursuant to CERCLA §121(c), 42 U.S.C. §9621(c).

Beckman has implemented the ROD under EPA oversight pursuant to Administrative Order #90-26 issued November 16, 1990, as amended March 20, 1995.

BASIS FOR THE DOCUMENT

1989 ROD Implementation

Upper Aquifer:

Analysis of groundwater samples collected during the September 1989 annual monitoring event indicated that upper aquifer COC concentrations had decreased to less than the cleanup goals established in the ROD. With approval from EPA, Beckman ceased operation of the upper aquifer containment/reclamation wellfield on January 15, 1990. COC concentrations in groundwater samples collected from upper aquifer index wells remained less than the cleanup goals for several years. Monitoring continued until 1997; all upper aquifer wells have since been abandoned. EPA has determined that the cleanup of the upper aquifer is complete.

Upper Aquitard/Lower Aquifer:

COCs were detected at concentrations exceeding cleanup goals in limited portions of the upper aquitard and lower aquifer at the site. The area requiring remediation was defined based on data collected from lower aquifer monitor wells (L-series wells) and upper aquitard piezometers completed in the shallow and deep portions of the upper aquitard (AQ-series piezometers). Interim operation of the upper aquitard/lower aquifer extraction wellfield was initiated on August 23, 1991, upon approval from the EPA. Pumping of the wellfield was initiated to control movement of COCs in upper aquitard and lower aquifer groundwater pending completion of EPA's review of the Final Remedial Design Plan. The Final Remedial Design Plan for the upper aquitard and lower aquifer was approved by the EPA on March 13, 1992.

The interim extraction wellfield was equivalent to Phase I of the remedial design for the upper aquitard and lower aquifer. The Phase I extraction wellfield included four upper aquitard extraction wells and the four lower aquifer extraction wells. An additional lower aquifer extraction well was incorporated into the extraction wellfield on October 24, 1991.

Phase II of the remedial design was constructed during the fourth quarter of 1992. During this period, 4 new monitoring wells and 10 new extraction wells were drilled and constructed. Operation of the Phase II extraction wellfield began on January 22, 1993.

Phase III allowed for the construction and operation of one lower aquifer extraction well at each of two locations if lower aquifer groundwater COC concentrations increased to greater than cleanup goals at these locations. The 1,1-DCE concentration in lower aquifer index well L-29 increased to a concentration greater than the cleanup goal during the second quarter 1996. Lower aquifer index well L-29, located adjacent to upper aquitard extraction well AQ-2-EW, was incorporated into the extraction wellfield and began operation as a lower aquifer extraction well on July 5, 1996. The 1,1-DCE concentration in lower aquifer index well L-27 increased to a concentration greater than the cleanup goal during the third quarter 1996. Lower aquifer index well L-27, located adjacent to upper aquitard extraction well AQ-11-EW, was incorporated into the extraction wellfield and began operation as a lower aquifer extraction well on April 14, 1997.

By the summer of 1996, COC concentrations in groundwater in the majority of the area within the extraction wellfield in both the upper aquitard and lower aquifer had been reduced to concentrations less than the cleanup goal for 1,1-DCE. Wells with COC concentrations less than cleanup goals for at least one quarter of operation were deactivated based on the results of an extraction wellfield evaluation.

In March 1998, Beckman requested and received verbal approval from the EPA to conduct an extraction wellfield operations static test. At this time, 1,1-DCE concentrations in water pumped by the remaining upper aquitard and lower aquifer extraction wells appeared to have stabilized at concentrations above the cleanup goal. The stabilized concentrations were believed to be due to the limited influence of pumping on the leakage rates from low hydraulic conductivity interbeds of the upper aquitard. All active extraction wells were to be deactivated and groundwater quality sampling would be increased to determine the effect on upper aquitard and lower aquifer groundwater quality from turning off the extraction wells.

The five remaining active extraction wells were deactivated on April 13, 1998. As a result, 1,1-DCE concentrations decreased to and remained below cleanup goals in three of the extraction wells within 1 month. 1,1-DCE concentrations in L-27-EW remained on trend above the cleanup goal. 1,1-DCE concentrations in L-29-EW increased. This well was reactivated on July 29, 1998. In addition, monitor well AQ-2-LO was converted to an extraction well and activated on September 24, 1998, to assist in the remediation.

By March 1999, the 1,1-DCE concentrations had stabilized in L-29-EW and AQ-2-LO. These two wells were turned off on April 1, 1999. Concentrations of 1,1-DCE initially increased in both wells and have since then decreased. The 1,1-DCE concentrations are currently slightly above the cleanup goal of 6 ppb in well L-29-EW; well AQ-2-LO is below the goal.

The ROD selected remedy in the upper aquitard and lower aquifer was carried out from August 1991 until April 1999, when virtually all of the upper aquitard and lower aquifer was successfully remediated. Small, localized areas of the upper aquitard and lower aquifer remain above cleanup goals. Further focused operation of the pump and treat system in these areas of the upper aquitard and lower aquifer failed to show progress toward achieving cleanup goals due to the inability to accelerate contaminant removal from the upper aquitard. An EPA-approved static period of observation and monitoring followed by further focused pumping and treating, indicated that these small remaining areas were not likely to be remediated by conventional pump and treat alternatives in a reasonable timeframe and at reasonable cost.

Groundwater monitoring has continued since 1999; groundwater concentrations of 1,1-DCE have generally remained stable or decreased. Since 2001 all upper aquitard monitoring locations have remained below the 1,1-DCE cleanup goals of 6 ppb. The last monitoring event occurred in February 2005.

Soil:

The Record of Decision issued by EPA in September 1989 stated that four potential soil contamination source areas were identified and studied during the remedial investigation. Out of

130 soil samples tested for both organic and inorganic contaminants, there were six samples that contained concentrations of lead at levels considered to be a health concern. Soil samples were collected from the 'soil stain area" located adjacent to one of the plant buildings and at one time a blue stain could be seen in the area. Additional sampling of the soils in this area was conducted to better define the limits of the lead contaminated soils.

In 1990, in accordance with the ROD, the lead contaminated soils were excavated and disposed of off-site in a disposal facility meeting RCRA and CERCLA requirements. EPA has determined that the cleanup of the soils is complete, thus providing remediation of any health risks associated with soil borne contaminants at this site.

EPA's Five-Year Review

EPA completed the second Five-Year Review for the Site on September 29, 2003. EPA found that the groundwater remedy was constructed in accordance with the ROD and had functioned as designed and achieved cleanup goals for the upper aquifer but not the lower aquifer. To address the remaining low-level contamination in the lower aquifer, EPA recommended changing the remedy to Monitored Natural Attenuation by amending the ROD. The Five-Year Review concluded that an engineered remedy, such as pump and treat, would not be cost-effective in cleaning up the remaining groundwater contamination at the Site.

Current Groundwater Conditions

Groundwater is considered the sole potential pathway of exposure to humans. Connections to municipal water sources, remedial actions, and institutional controls on well drilling have all limited the potential for human exposure to the contaminated groundwater.

Results of the February 2005 groundwater sampling event show two small, isolated areas in the lower aquifer with 1,1-DCE concentrations above the cleanup goal (Table 1). The highest concentration in the lower aquifer is 31 ppb at L-3. The other exceedances of 6.7 ppb and 8.3 ppb were detected at L-27-EW and L-29-EW, respectively. Monitoring locations in the upper aquitard remain below the cleanup goal.

DESCRIPTION OF NEW ALTERNATIVES

The COCs found in the lower aquifer are a result of the secondary source of COCs contained in the upper aquitard above the lower aquifer. Contaminated groundwater in the upper aquifer has leaked downward and into the upper aquitard. Although COCs have attenuated in the upper aquitard, isolated locations still provide a source of COCs to the lower aquifer. The primary constraint limiting the effectiveness of any remedial technology designed to actively reduce the concentration of contaminants is the heterogeneity within the upper aquitard and the fine-grained nature of the unit. The same physical mechanisms which retain the COCs in the upper aquitard limit the effectiveness of pump and treat alternatives (removal) and the application of additional treatment technologies in places where the COCs reside (in situ).

Remedial Technologies Investigated

To achieve a reduction in concentration in the lower aquifer, the COCs must be removed from the upper aquitard, which in effect provides the source of COCs to the lower aquifer. The following four potential remedial technologies for removing COCs from the upper aquitard were evaluated:

- Enhanced Extraction of Groundwater with Water Injection

  This alternative would use groundwater extraction in conjunction with injection of the treated water to enhance hydraulic gradients.

- Enhanced Extraction of Groundwater with Hot Water Injection

  This alternative would use groundwater extraction in conjunction with injection of hot water to enhance hydraulic gradients and to increase the solubility of COCs.

- Thermally Enhanced Recovery using Steam Injection

  This alternative would use steam injection to enhance removal of residual COCs by groundwater extraction and soil vapor extraction.

- In Situ Destruction of 1,1-DCE through Hydrous Pyrolysis/Oxidation

  This alternative would use pyrolysis/oxidation to destroy the residual COCs in situ.

The screening process consisted of evaluating each remedial alternative in terms of its effectiveness, implementability, and relative cost as prescribed in EPA's guidance for conducting feasibility studies under CERCLA. The evaluation of the four potential remedial technologies indicated that in each case there was a high degree of uncertainty with regard to effectiveness of removal of COCs from the aquitard with the proposed technology. Therefore, none of these potential remedial technologies were carried forward to the final remedial alternatives analysis and evaluations. Further details on the evaluation of the remedial technologies can be found in "Monitored Natural Attenuation Plan: Beckman Instruments, Inc. Site" (Hargis + Associates, Inc, June 30, 2005).[4]

Remedial Alternatives Evaluated

Three remaining remedial alternatives were considered for a focused alternatives analysis and evaluations. The three alternatives include no further action, resumption of the ROD remedy (extraction and treatment) at selected locations, and monitored natural attenuation. A summary of each alternative is shown below:

Alternative No. 1 – No Further Action

CERCLA requires evaluation of the "no action" alternative as a baseline to allow comparison of alternatives. Under the no action alternative, no remedial action would be

[4] This document, which is included in the Administrative Record, served in lieu of a focused feasibility study.

implemented to pump and treat groundwater, no containment would be implemented, and no monitoring of groundwater conditions would take place. Continued reduction in chemical concentrations and some reduction of volume, toxicity and mobility as a result of an unmonitored natural attenuation would likely take place. Risk would also likely be reduced with time but it would be unquantified because no data would be collected.

The remedial action objectives would not be met under the "no action" alternative due to the fact that chemical concentrations in the isolated areas would not be monitored to assure that contamination was not migrating to unaffected areas. Groundwater would not be monitored and this would increase the potential for the public to be inadvertently exposed to contaminated groundwater. This alternative is therefore not protective of human health and the environment. Therefore, the no action alternative is not considered a potential remedy for the site and is not evaluated further.

Alternative No. 2 – Resumption of Extraction and Treatment

The extraction and treatment alternative would require a resumption of the groundwater pumping from the lower aquifer and treatment of the extracted water by air stripping. Capital costs include the construction of additional pipelines and a new 150 gpm treatment tower. The treated groundwater from the air stripping facilities would be used for agricultural irrigation or discharged to infiltration basins located near the Tule River as before. Routine monitoring of the groundwater before and after treatment would be conducted to assess operational conditions and ensure cleanup goals are met.

This alternative achieves protection of human health by keeping current institutional controls in place that minimize the potential for human exposure to groundwater exceeding EPA's cleanup goals. As part of the annual reporting process, Beckman will contact Tulare County HHSA to confirm that the institutional controls against well drilling in the Site area are still in effect and will note the status of the controls in the annual report.

Alternative No. 3 – Monitored Natural Attenuation

Newly installed wells, in addition to existing monitoring wells, will be sampled to monitor the progress of the decreases in contaminant concentrations. The effectiveness of the MNA remedy will be periodically evaluated in accordance with EPA's MNA guidance. This alternative achieves protection of human health by keeping current institutional controls in place that minimize the potential for human exposure to groundwater exceeding EPA's cleanup goals. As part of the annual MNA reporting process, Beckman will contact Tulare County HHSA to confirm that the institutional controls against well drilling in the Site area are still in effect and will note the status of the controls in the annual report.

MNA protects groundwater resources by carefully monitoring the concentrations of COCs to ensure containment and reduction in concentrations over time due to natural attenuation processes. The primary natural attenuation processes that are occurring at the

Site are lateral and downgradient dispersion, dilution via the flow of clean water from the upper aquifer and upper aquitard into the lower aquifer, and additional dilution by upgradient recharge of the lower aquifer.

The monitoring program will require periodic evaluation of the effectiveness of the MNA remedy at the site. The monitoring and evaluation is relatively straightforward, given that only two relatively small isolated areas of recalcitrant 1,1-DCE concentrations remain above the cleanup goal. The 1,1-DCE cleanup goal is the primary remaining remedial action objective. The groundwater monitoring program will allow regular and routine comparison of the concentrations of 1,1-DCE to the cleanup goal of 6μg/l.

EVALUATION OF ALTERNATIVES

EPA evaluated the three potential remedial action alternatives against the nine criteria designed to measure the effectiveness and acceptability of each alternative.

To be considered a viable remedy for a hazardous waste problem, a remedial alternative must first meet EPA's two basic or "threshold" criteria. These criteria require that the remedy 1) protect human health and the environment and 2) comply with laws and requirements of other government agencies with regulatory authority over the site. These authorities are collectively known as "applicable, relevant and appropriates requirements" or ARARs. Of the three alternatives discussed in the Proposed Plan, only two meet the threshold criteria, Extraction and Treatment and Monitored Natural Attenuation. In addition to the two threshold criteria, there are seven other criteria that EPA must consider when evaluating a proposed remedy

The following table summarizes EPA's evaluation of the alternatives against the nine criteria. As a result of this evaluation, EPA prefers Alternative No. 3 – Monitored Natural Attenuation. Based upon information currently available, EPA believes Alternative No. 3 meets the threshold criteria and provides the best balance among the alternatives evaluated.

Comparison of Alternatives

CRITERIA	ALT. No. 1 – NO ACTION	ALT. No. 2 – Extraction & Treatment	ALT. No. 3 – Monitored Natural Attenuation
Protectiveness	No	Yes	Yes
Compliance with ARARs	No	Yes	Yes
Long-term Effectiveness	No data would be collected to determine effectiveness	Effective and permanent	Effective and permanent

Reduction in toxicity, mobility, or volume	No data would be collected to determine reduction	Reduction will occur in less than 15 years	Reduction will occur in less than 15 years
Short-term Effectiveness	No data would be collected to determine effectiveness	Effective in the short term	Effective in the short term
Implementability	No implementability issues	Additional capital improvements needed to implement	Straightforward to implement
Capital Costs	$ 0	$ 631,000	$ 94,000
Annual O&M Costs	$ 0	$ 98,000	$ 28,000
15-Yr Present Worth	**$ 0**	**$ 1,698,000**	**$ 399,000**
State Acceptance	No	Yes	Yes
Community Acceptance	Unknown	Previously supportive	Yes

EPA's Selected Alternative:
Alternative No. 3- Monitored Natural Attenuation, with Existing Institutional Controls

EPA is changing the cleanup strategy for the Site because the sole remaining COC above the cleanup standard, 1,1-DCE, has been successfully remediated in all but a few isolated areas in the upper aquitard and lower aquifer. The current information on the migration of impacted groundwater and the generally declining concentrations of 1,1-DCE, warrant reevaluation of the original remedy of groundwater extraction and treatment. After evaluation of the three cleanup alternatives to address the residual groundwater contamination at the Site, EPA selects Alternative No. 3 - Monitored Natural Attenuation (MNA) as the remedy that provides the optimum balance among EPA's nine evaluation criteria. Alternative No. 3 involves natural reduction of groundwater contaminant concentrations in the upper aquitard and lower aquifer in those few remaining areas where concentrations above the cleanup standard still exist. Naturally occurring physical and chemical processes such as dilution, dispersion and/or adsorption are already occurring and will continue to do so. EPA will closely monitor the groundwater to ensure that the reduction in chemical concentrations in groundwater continues to occur. In addition, EPA will require annual verification that the existing institutional controls against well drilling in the study area are still in effect. Tulare County HHSA has continued to implement the 1983

moratorium on building permits, loan certifications, or authorities to construct for property owners who propose to obtain water from wells in the Site area. [5]

Remedial Action Objectives

The original ROD stated that "...the basic cleanup objective is to cho[o]se a remedy that is protective of public health and the environment, that is cost effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable." [6]

EPA's objectives for the actions considered in cleanup of groundwater include:

1. Protect human health and the environment by continuing to eliminate exposure to contaminated groundwater; and
2. Reduce contamination in groundwater to concentrations that meet cleanup goals and return groundwater to beneficial use.

At this site, EPA is selecting Monitored Natural Attenuation (MNA) as the remedy to achieve these goals for the remaining portion of the site requiring groundwater cleanup. The long term outcome with this remedy is consistent with these stated objectives and is no less effective than other proposed methods. The specific intent of this amended ROD is to select a remedy that will reduce concentrations of 1,1-DCE in the isolated remaining areas of the lower aquifer to below the State MCL of 6 ppb. This cleanup level remains unchanged from the original ROD.

Institutional Controls

Since 1983 the County of Tulare has imposed a moratorium on well drilling in all areas downgradient of the Site. This institutional control prohibits the approval of well permits in the Site area. The 1989 ROD did not specifically select as part of the remedy the institutional control that was already in place. This ROD Amendment, in addition to selecting Monitored Natural Attenuation as the remedy, incorporates this institutional control. Therefore, this institutional control is part of the selected remedy.

Applicable Relevant and Appropriate Requirements

The 2003 Five-Year Review determined that the exposure assumptions, toxicity data, cleanup levels, and RAOs are still valid and that there are no changes in the ARARs associated with this Site. A review of current ARARs from other similar sites in California was conducted. Due primarily to the sole remaining COC being 1,1-DCE above the current CMCL, which is unchanged from 1989, none of the more current ARARs were judged to have any additional impact on site activities under an MNA approach.

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[5] The City of Porterville is in the process of annexing unincorporated areas of Tulare County, including the Site area. Restrictions on the installation of wells in the Site area will remain in effect through the appropriate County and City authorities.

[6] 1989 ROD, page 16

SUPPORT AGENCY COMMENTS

DTSC concurred with the Monitored Natural Attenuation (MNA) remedy selected in this ROD Amendment in a letter dated August 25, 2005. The California Regional Water Quality Control Board (RWQCB) has also provided concurrence in a letter dated August 15, 2005.

STATUTORY DETERMINATIONS

The modified remedy in this ROD Amendment satisfies CERCLA §121, including the following statutory requirements of CERCLA §121(b): 1) be protective of human health and the environment; 2) comply with ARARs; 3) be cost-effective; and 4) utilitze permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Although the modified remedy does not satisfy the preference for treatment as a principle element, the original remedy of groundwater extraction and treatment has reduced the contamination at the Site to a level where treatment is not cost effective.

PUBLIC PARTICIPATION COMPLIANCE

The public participation requirements set out in NCP §300.435(c)(2)(ii) have been met. The Proposed Plan was issued on August 1, 2005 and provided for a 30-day public comment period that ended on August 30, 2005. A public meeting was held on August 9, 2005 at the Porterville Public Library located at 41 West Thurman Avenue in Porterville, California. A full transcript of the meeting can be found in the Site's Administrative Record file. The Administrative Record file, including reports, fact sheets and related documents, is available for public review at the Superfund Records Center at Region IX offices in San Francisco and in the reference section of the Porterville Public Library located at 41 West Thurman Avenue. In addition, the Proposed Plan was mailed to all persons contained on the Beckman Instruments Site mailing list, which includes members of the general public, local elected officials, Beckman Instruments employees, and other parties expressing an interest in the proceedings. A public notice of the availability of the Proposed Plan and public meeting was published in the Porterville Recorder on July 25, 2005.

Responsiveness Summary

The attached Responsiveness Summary presents EPA's responses to comments received on the Proposed Plan at the public meeting and during the 30-day public comment period.

AUTHORIZING SIGNATURE

Elizabeth J. Adams, Chief
Site Cleanup Branch
Superfund Division
U.S. EPA Region 9

September 27, 2005
Date

RESPONSIVENESS SUMMARY

This Responsiveness Summary presents EPA's responses to the written and selected oral comments received at the public meeting and during the public comment period. The volume of community comments on the Beckman Proposed Plan was extremely light. The only comment letter received indicated support of the MNA alternative for the Beckman Site. The comment letter can be found in the Administrative Record file. During the public meeting, several questions about the Site were raised by members of the community, but no adverse comments were received. A full transcript of the meeting can be found in the Administrative Record file.

Summary of Public Meeting Questions

Are there any private drinking water wells in the affected area?

EPA Response: No, there are no active private drinking water wells in the affected area. After the groundwater contamination was discovered, all private drinking water wells were shut down. Residents received bottled water until the connections to the City of Porterville water supply system were completed. Some agricultural wells were replaced and those wells are still used for irrigation and groundwater monitoring purposes.

What is the water source for City of Porterville Well 13?

EPA Response: City Well 13 is located in the affected area near the Beckman facility. Although no contamination was detected in Well 13, the well was shut down after the groundwater contamination was discovered. The well is screened between 150 feet bgs and 700 feet bgs. In recent years, the City has used Well 13 for water supply during the summer months. No contamination has ever been detected in the water extracted by Well 13, and the water meets all drinking water standards. The City's water supply system consists of 26 wells and water from all the wells is commingled in the distribution system.

Who pays for the costs of implementing the selected alternative?

EPA Response: Beckman-Coulter, Inc. pays for all costs associated with the selected alternative as the Site's sole potentially responsible party (PRP).

Who conducts the monitoring for the MNA remedy?

EPA Response: The monitoring is conducted by consultants hired by Beckman-Coulter, Inc. under an EPA-approved Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP). All groundwater samples must be analyzed by an EPA-certified lab.

Are there any restrictions on property development in the affected area?

EPA Response: The only restriction that EPA is aware of is the Tulare County restriction on the installation of wells in the affected area.

Table 1: Contaminant Concentrations in Groundwater (ppb), February 2005

WELL	1,1,1-TCA	1,1-DCE	FREON 113	1,1-DCA	TCE
Cleanup Goal	*200*	*6.0*	*1200*	*5.0*	*5.0*
Upper Aquitard Wells					
AQ-02-EW	<0.5	<0.5	<0.5	<0.5	<0.5
AQ-02-PZ1	<0.5	<0.5	<0.5	<0.5	<0.5
AQ-02-PZ2	<0.5	<0.5	<0.5	<0.5	<0.5
AQ-11-EW	<0.5	<0.5	<0.5	<0.5	<0.5
AQ-11-PZ1	<0.5	<0.5	<0.5	<0.5	<0.5
AQ-11-PZ2	<0.5	2.4	1.6	<0.5	<0.5
Lower Aquifer Wells					
AQ-02-LO	<0.5	4.9	2.8	<0.5	<0.5
AQ-02-LP	<0.5	3	1.4	0.57	<0.5
L-03	<0.5	**31**	16	1.2	0.62
L-05	<0.5	<0.5	<0.5	<0.5	<0.5
L-06	<0.5	<0.5	<0.5	<0.5	<0.5
L-07	<0.5	1.2	<0.5	0.73	<0.5
L-08	<0.5	<0.5	<0.5	<0.5	<0.5
L-09	<0.5	<0.5	<0.5	<0.5	<0.5
L-17	<0.5	<0.5	<0.5	<0.5	<0.5
L-27-EW	<0.5	**6.7**	3.9	<0.5	<0.5
L-28	<0.5	2.1	1.7	<0.5	0.68
L-29-EW	<0.5	**8.3**	4	1.4	<0.5